Modulating Deluge systems

Electric Actuated with Remote Reset, Pressure Reducing Deluge Valve

FDV - PE1

The FDV is a Fire Protection control valve for Deluge fire sprinkler systems, designed for installations in hazardous environments.

The FDV-PE1 is a pressure control Deluge system, actuated electrically and resets remotely.

An electric detection systems activates a solenoid valve through the control panel, to open the FDV deluge valve. Once open, the valve reduces the inlet high pressure to a predetermined fixed outlet pressure.

The Deluge system incorporates an emergency valve, bypassing the fire detection systems for manual operation. Designed for vertical or horizontal installation, a globe pattern, line pressure operated FDV-PE1 valve features a direct elastomeric diaphragm seal. It has no balancing spring or internal metallic wet components in the valve body. The hydrodynamic pattern design, ensures high flow rates with minimum head loss.

MARKETS

Marine P.O.G. Airports

TECHNICAL DATA

FLUID:
Water, Brackish water, Sea water, Foam

SIZE RANGE:
40mm to 250mm (1½" to 10")

AVAILABLE CONNECTIONS ENDS:
Flange*Flange, Groove*Groove, Flange*Groove, Groove*Flange, Thread*Thread

PRESSURE NOMINAL:
250 psi (17.2 bar)

REGULATION RATIO: 5:1

SENSITIVITY: 1.45 psi (0.1 Bar)

APPROVALS

ADVANTAGES

- Only three parts: body, diaphragm & cover plate, no wet metal spring inside the control chamber
- Full bore unobstructed
- Simple manual reset of the valve to standby position without draining or opening the valve itself, neither closing OS&Y or other valves in the system
- Open fail safe valve, maintained in stand-by closed position
- Low maintenance cost: the valve is serviced in-line and only one replaceable part which is long life elastomeric diaphragm
- Conforms with inspection, Testing and Maintenance Standard of water-based Fire Protection Systems, NFPA 25

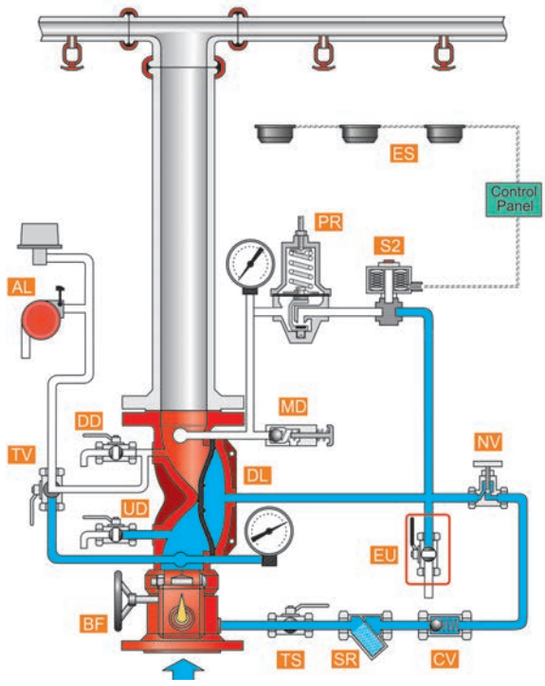
CHARACTERISTICS

- Hydro-dynamic pattern design ensures high flowrates with minimum head loss
- The valve trips open automatically upon a gradual release of water pressure from its control chamber. The valve is actuated by an electric signal transmitted to the valve's solenoid from the main control valve panel, due to a flame heat exposure of heat detection sensors system
- Soft closing upon pressurization of the valve's control chamber, by line pressure or other independent water source prevents surges.
- A pressure reducing pilot enables a full control over the downstream pressure and ensures a steady set in a wide pressure range

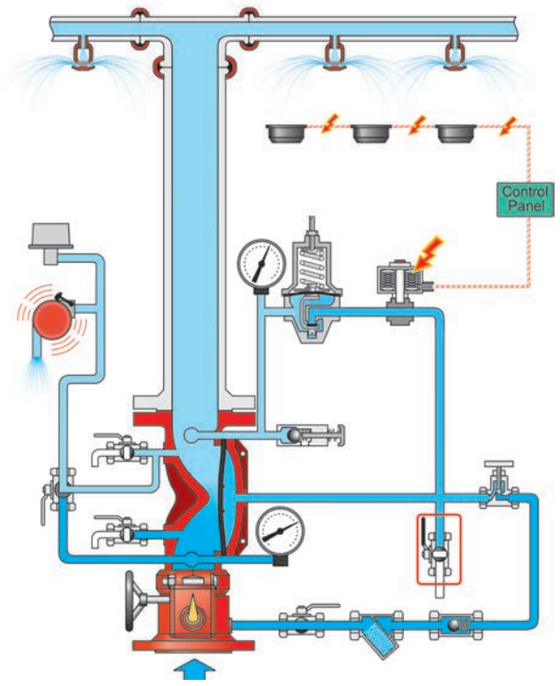
The FDV-PE1 resets to stand-by close position by de-energizing the alarm system solenoid's coil through the main control panel.

Schematic drawing

Set position



Fire position



BF - Butterfly valve
DL - FDV Deluge valve
UD - Upstream drain valve
DD - Downstream drain valve
AL - Acoustic & Electric alarms
TS - Trim supply valve
SR - "Y" strainer
CV - Check valve
NV - Needle valve
PS - PSA – Pressure Supply Arrestor
MD - MADV – Manual Automatic Drain Valve
TV - Alarm test valve
EU - Emergency Manual Unit
PR - PRPV – Pressure Reducing Pilot Valve
S3 - Solenoid 2 way
ES - Electric Sensors system

OPERATION

SET position

Pressurized water in the alve's control chamber [DL] is trapped by the check valve [CV], by the closed 2 way solenoid [S2] and by the closed emergency valve [EU], maintaining the FDV deluge valve [DL] closed.

FIRE situation

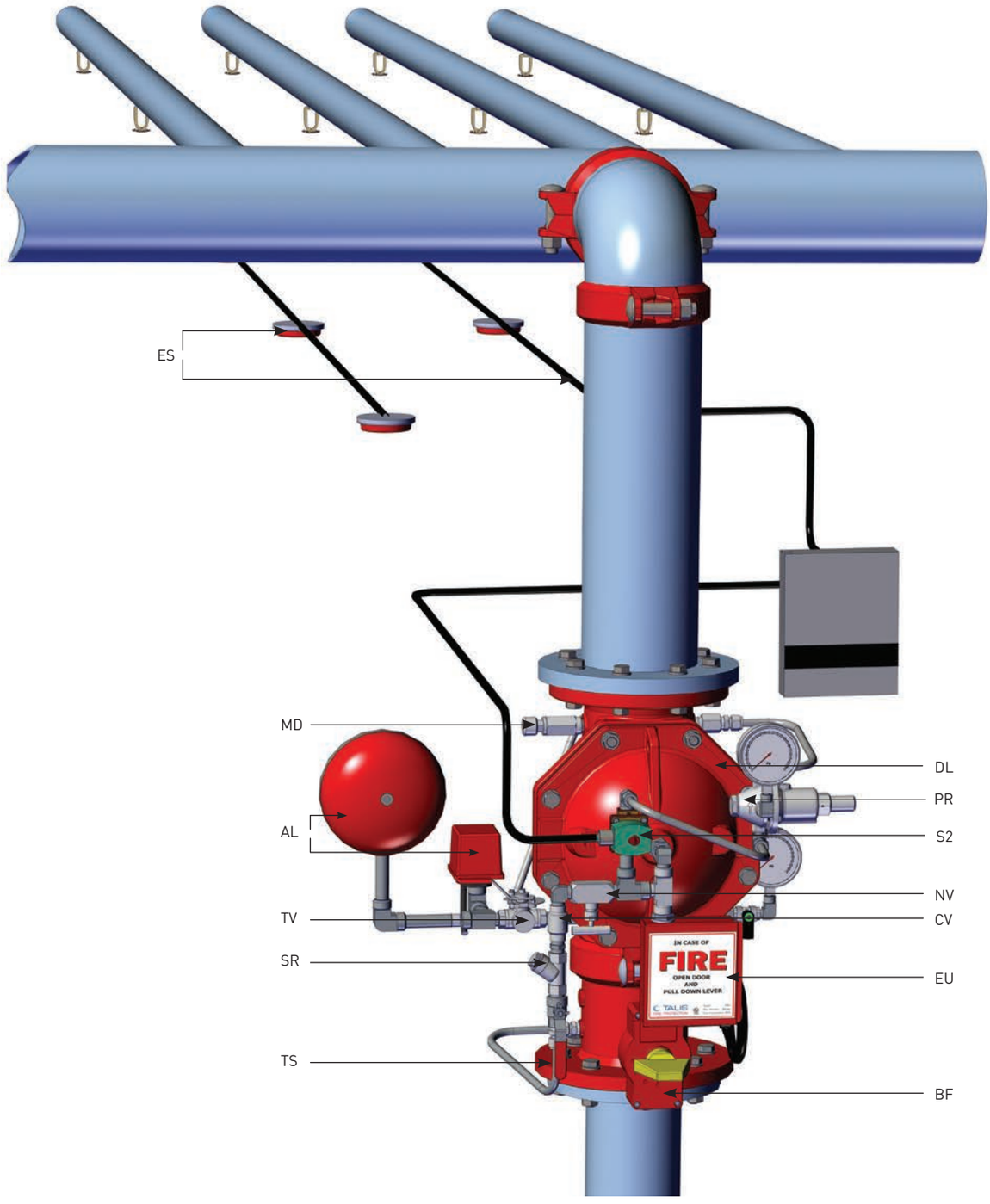
When an electric detection system senses flame heat, it triggers the main control panel that in turn, transmits an electric signal, commanding the 2 way solenoid valve [S2] to open. The deluge valve's control chamber drains through the pressure reducing pilot [PR]. The FDV Deluge valve opens, admitting water to the spray sprinklers line at a steady, preset pressure.

RESET position

System reset requires the reset of the electric alarm system to de-energize and close the 2 way solenoid valve. The FDV deluge control chamber pressurizes and the valve closes.

FDV - PE1

Typical installation



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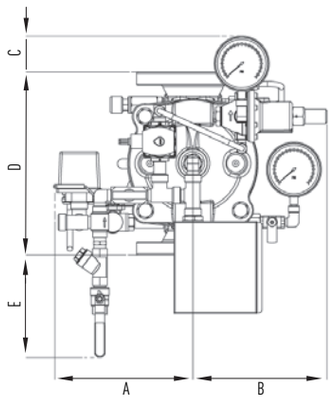
Dimensions Table

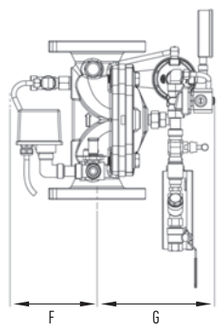
Vertical

Size	1 1/2" 2"		3"		4"		6"		8"	
	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
A	254	10.0	231	9.1	281	11.1	289	11.4	318	12.5
B	266	10.5	238	9.4	282	11.1	311	12.2	362	14.3
C	81	3.2	-	-	-	-	-	-	-	-
D	224	8.8	325	12.8	400	15.7	462	18.2	580	22.8
E	235	9.3	182	7.2	137	5.4	107	4.2	57	2.2
F	160	6.3	172	6.8	207	8.1	232	9.1	263	10.4
G	263	10.4	324	12.8	298	11.7	361	14.2	394	15.5
Kg/lb	19.7	43.4	31.2	68.8	48.9	107.8	67.5	148.8	107.3	236.6



Horizontal

Size	1 1/2" 2"		3"		4"		6"		8"	
	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
A	255	10.0	247	9.7	281	11.1	289	11.4	422	16.6
B	256	10.1	238	9.4	284	11.2	311	12.2	369	14.5
C	53	2.1	-	-	-	-	-	-	-	-
D	224	8.8	325	12.8	400	15.7	462	18.2	580	22.8
E	310	12.2	182	7.2	147	5.8	119	4.7	57	2.2
F	155	6.1	172	6.8	209	8.2	231	9.1	263	10.4
G	263	10.4	324	12.8	336	13.2	453	17.8	483	19.0
Kg/lb	19.7	43.4	31.6	69.7	48.6	107.1	67.4	148.6	148.6	235.9



Factory Standard

MAIN VALVE:

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M
- Nickel Aluminum Bronze

ELASTOMERS:

- NR, fabric reinforced Natural Rubber
- EPDM, fabric reinforced
- NBR, fabric reinforced Nitrile Rubber

COATING:

- Rilsan Polyamide based (Nylon 11)
- Polyester based EPC
- High built Epoxy FBE
- Vitreous Enamel (internal only)

TRIM

PIPING & TUBING:

- Stainless Steel 316
- Copper/Brass
- Cupro-Nickel
- Monel®

FITTINGS:

- Stainless Steel 316
- Brass
- Super Duplex
- Cupro-Nickel
- Monel®

ACCESSORIES:

- Brass Nickel plated
- Nickel Aluminium bronze
- Stainless steel CF8M
- Monel®
- Cupro-Nickel

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- Energize to Open/Close valve
- Solenoid Voltage
- Solenoid Enclosure
- Solenoid Protection
- Pneumatic working pressure
- System installation orientation
- Additional accessories needed

For more detailed technical information, please refer to chapter Engineering Data.